

## United States Department of Agriculture Natural Resources Conservation Service

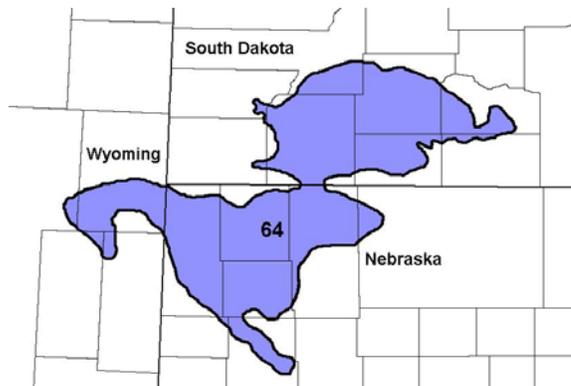
### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Dense Clay

**Site ID:** R064XY045NE

**Major Land Resource Area (MLRA):** 64 – Mixed Sandy and Silty Tableland



### Physiographic Features

This site occurs on nearly level to sloping upland valleys, fans, and stream terraces.

**Landform:** stream terrace, alluvial fan, plain

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	2,900	4,000
<b>Slope (percent):</b>	0	15
<b>Water Table Depth (inches):</b>	None	None
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	None	None
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Negligible	Very high

### Climatic Features

MLRA 64 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the Northern Great Plains and air masses move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 14 to 20 inches per year. The normal average annual temperature is about 47°F. January is the coldest month with average temperatures ranging from about 21°F (Wood, South Dakota (SD)), to about 25°F (Hemingford, Nebraska (NE)). July is the warmest month with temperatures averaging from about 70°F (Keeline 3 W, Wyoming (WY)), to about 76°F (Wood, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 55°F. This large annual range attests to the continental nature of this area's climate. Hourly winds average about 11 miles per hour (mph) annually, ranging from about 13 mph during the spring to about 10 mph during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 mph.

Growth of cool-season plants begins in early to mid-March, slowing or ceasing in late June. Warm-season plants begin growth about mid-May and continue to early or mid-September. Greenup of cool-season plants may occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	138	143
Freeze-free period (days):	161	163
Mean Annual Precipitation (inches):	14	20

**Average Monthly Precipitation (inches) and Temperature (°F):**

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.42	0.52	9.0	35.8
February	0.48	0.61	14.6	40.7
March	0.90	1.22	21.0	47.5
April	1.83	2.15	28.9	61.3
May	2.22	3.38	38.3	72.2
June	2.05	3.27	47.3	82.1
July	1.63	2.73	53.9	90.1
August	1.09	1.96	52.3	89.3
September	1.09	1.58	42.4	79.5
October	0.80	1.38	32.6	66.6
November	0.56	0.65	20.4	49.0
December	0.42	0.50	13.4	38.4

Climate Stations		Period	
Station ID	Location or Name	From	To
NE3755	Hemingford, NE	1964	1999
WY5085	Keeline 3 W, WY	1953	1986
SD9442	Wood, SD	1948	1999

For local climate stations that may be more representative, refer to <http://www.wcc.nrcs.usda.gov>.

**Riparian and Wetland Features**

No riparian areas or wetland features are directly associated with this site.

**Representative Soil Features**

The common features of soils in this site are the clay textured soils and slopes of 0 to 15 percent. The soils in this site are moderately well to well drained and formed in clayey alluvium or residuum from soft shale. The clay surface layer is one to five inches thick. The soils have a slow to very slow infiltration rate except after dry periods when initial uptake may be rapid due to cracking of the surface. Gilgai microrelief occurs in most areas. When dry these soils crack. Wet surface compaction can occur with heavy traffic. This site typically should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance, or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. Subsurface soil layers are moderately restrictive to water movement and root penetration.

These soils are susceptible to wind and water erosion. The hazard of water erosion increases on slopes greater than about six percent.

More information can be found in the various soil survey reports. Contact the local United States Department of Agriculture (USDA) Service Center for soil survey reports that include more detail specific to your location.

Parent Material Kind: alluvium, residuum, shale  
Parent Material Origin: shale, unspecified  
Surface Texture: clay  
Surface Texture Modifier: none  
Subsurface Texture Group: clayey  
Surface Fragments ≤3" (% Cover): 0  
Surface Fragments >3" (%Cover): 0  
Subsurface Fragments ≤3" (% Volume): 0  
Subsurface Fragments >3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	moderately well	well
Permeability Class:	very slow	very slow
Depth (inches):	20	80
Electrical Conductivity (mmhos/cm)*:	0	16
Sodium Absorption Ratio*:	0	25
Soil Reaction (1:1 Water)*:	5.6	9.0
Soil Reaction (0.1M CaCl <sub>2</sub> )*:	NA	NA
Available Water Capacity (inches)*:	2	4
Calcium Carbonate Equivalent (percent)*:	0	15

\*These attributes represent from 0-40 inches or to the first restrictive layer.

## Plant Communities

### Ecological Dynamics of the Site

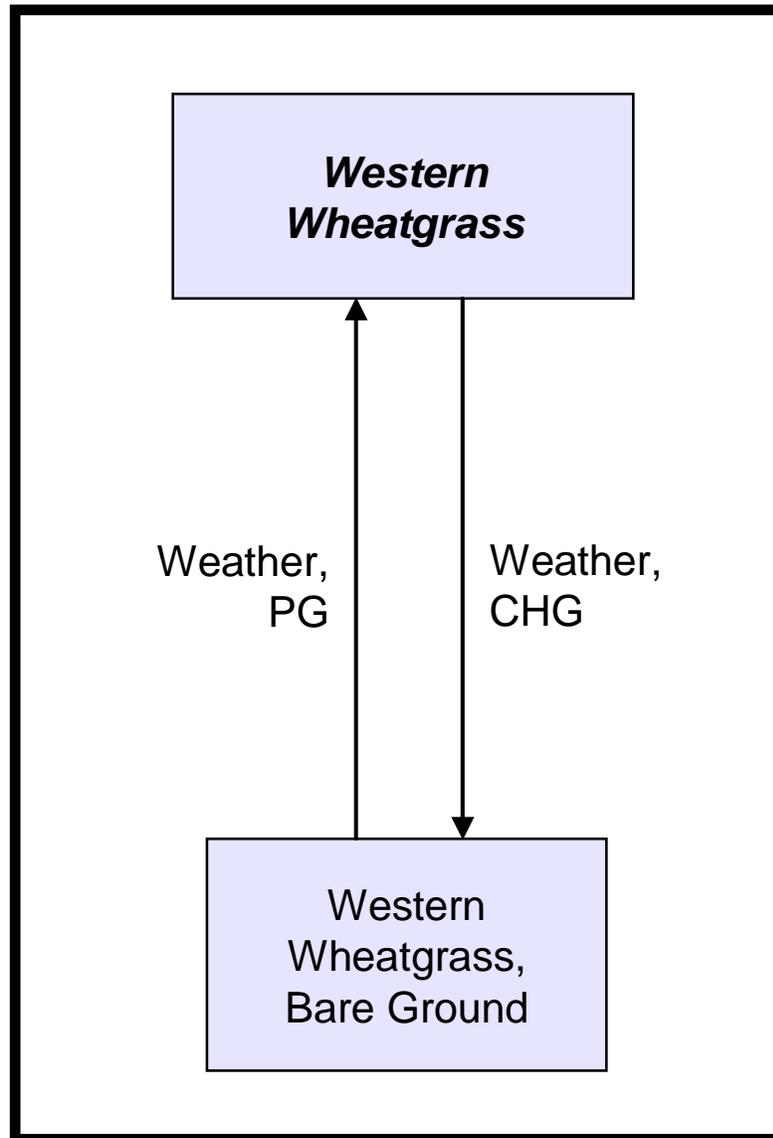
This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts of native and/or exotic plant and animal species, and management actions. While the following plant community descriptions describe more typical transitions between communities that will occur, severe disturbances, such as periods of well below average precipitation, can cause significant shifts in plant communities and/or species composition.

These soils are high in clay and have a low available water capacity. The shrink-swell potential is very high, resulting in cracks greater than two inches wide during dry periods. Western wheatgrass, with its strong rhizomes and high drought tolerance, is able to thrive in these soils. Western wheatgrass dominates the site and production is closely related to the vigor of western wheatgrass. Slickspots are sometimes associated with this site. Slickspots are bare ground areas that are affected by high sodium concentrations. The soil factors are the dominant influence and grazing management does not typically affect these areas.

Interpretations are primarily based on the Western Wheatgrass Plant Community. It has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used. Plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

The following diagram illustrates the common plant communities and vegetation states commonly occurring on the site and the transition pathways between communities and states. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

## Plant Communities and Transitional Pathways



**CHG** – Continuous heavy grazing (heavy levels of grazing of a unit during most or all of the growing season); **PG** - Prescribed grazing (planned, controlled harvest of vegetation with grazing or browsing animals – see FOTG, Section IV, 528); **Weather** - Annual weather fluctuations

### Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SYMBOL	Western Wheatgrass			Western Wheatgrass, Bare Ground			
		Group	lbs./acre	% Comp	Group	lbs./acre	% Comp	
<b>GRASSES &amp; GRASS-LIKES</b>			1350 - 1425	90 - 95		720 - 760	90 - 95	
western wheatgrass	PASM	1	600 - 900	40 - 60	1	440 - 640	55 - 80	
<b>WARM-SEASON GRASSES</b>		<b>2</b>	<b>0 - 150</b>	<b>0 - 10</b>	<b>2</b>	<b>0 - 40</b>	<b>0 - 5</b>	
blue grama	BOGR2	2	0 - 75	0 - 5	2	0 - 24	0 - 3	
buffalograss	BUDA	2	0 - 150	0 - 10	2	0 - 24	0 - 3	
sideoats grama	BOCU	2	0 - 75	0 - 5	2	0 - 24	0 - 3	
<b>NEEDLEGRASS</b>		<b>3</b>	<b>300 - 600</b>	<b>20 - 40</b>	<b>3</b>	<b>0 - 80</b>	<b>0 - 10</b>	
green needlegrass	NAVI4	3	300 - 600	20 - 40	3	0 - 80	0 - 10	
<b>NATIVE GRASSES &amp; GRASS-LIKES</b>		<b>4</b>	<b>0 - 75</b>	<b>0 - 5</b>	<b>4</b>	<b>0 - 24</b>	<b>0 - 3</b>	
prairie junegrass	KOMA	4	0 - 75	0 - 5	4	0 - 24	0 - 3	
Sandberg bluegrass	POSE	4	0 - 75	0 - 5	4	0 - 24	0 - 3	
sedge	CAREX	4	0 - 75	0 - 5	4	0 - 24	0 - 3	
other perennial grasses	2GP	4	0 - 75	0 - 5	4	0 - 24	0 - 3	
<b>NON-NATIVE GRASSES</b>		<b>5</b>			<b>5</b>	<b>0 - 24</b>	<b>0 - 3</b>	
cheatgrass	BRTE				5	0 - 24	0 - 3	
<b>FORBS</b>		<b>6</b>	<b>0 - 150</b>	<b>0 - 10</b>	<b>6</b>	<b>0 - 40</b>	<b>0 - 5</b>	
American vetch	VIAM	6	0 - 75	0 - 5	6	0 - 24	0 - 3	
bastard toadflax	COUM	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
bladderpod	LESQU	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
bluebells	MERTE	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
curlycup gumweed	GRSQ				6	0 - 24	0 - 3	
deervetch	LOUNU	6	0 - 75	0 - 5	6	0 - 24	0 - 3	
desert biscuitroot	LOFO	6	0 - 75	0 - 5	6	0 - 24	0 - 3	
gumbo lily	OECAC2	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
heath aster	SYER	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
Lambert crazyweed	OXLA3	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
milkvetch	ASTRA	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
Missouri goldenrod	SOMI2	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
pennycress	MICRO18				6	0 - 24	0 - 3	
phlox	PHLOX	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
prairie coneflower	RACO3	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
pussytoes	ANTEN	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
scarlet gaura	GACO5	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
scarlet globemallow	SPCO	6	0 - 75	0 - 5	6	0 - 24	0 - 3	
sweetclover	MELIL				6	0 - 40	0 - 5	
wavyleaf thistle	CIUN	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
western salsify	TRDU	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
western wallflower	ERCAC	6	0 - 30	0 - 2	6	0 - 8	0 - 1	
western yarrow	ACMI2	6	0 - 45	0 - 3	6	0 - 16	0 - 2	
wild onion	ALLIU	6	0 - 45	0 - 3	6	0 - 8	0 - 1	
wild parsley	MUDI	6	0 - 75	0 - 5	6	0 - 24	0 - 3	
other annual forbs	2FA				6	0 - 24	0 - 3	
<b>SHRUBS</b>		<b>7</b>	<b>0 - 45</b>	<b>0 - 3</b>	<b>7</b>	<b>0 - 40</b>	<b>0 - 5</b>	
brittle cactus	OPFR	7	0 - 30	0 - 2	7	0 - 24	0 - 3	
plains pricklypear	OPPO	7	0 - 45	0 - 3	7	0 - 40	0 - 5	
<b>Annual Production lbs./acre</b>			<b>LOW</b>	<b>RV</b>	<b>HIGH</b>	<b>LOW</b>	<b>RV</b>	<b>HIGH</b>
<b>GRASSES &amp; GRASS-LIKES</b>			900	1403	1795	500	760	910
<b>FORBS</b>			0	75	155	0	20	45
<b>SHRUBS</b>			0	23	50	0	20	45
<b>TOTAL</b>			900	1500	2000	500	800	1000

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value. Refer to PLANTS database for scientific names and codes: <http://plants.usda.gov>

## Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility but they are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities” (DPCS). According to the USDA Natural Resources Conservation Service (NRCS) National Range and Pasture Handbook, DPCs will be determined by the decision makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

### Western Wheatgrass Plant Community

Interpretations are based primarily on the Western Wheatgrass Plant Community (this is also considered to be climax). This plant community evolved with grazing by large herbivores and occasional fire, and can be maintained with prescribed grazing, prescribed burning, or areas receiving occasional short periods of rest. The potential vegetation is about 85 percent grasses or grass-like plants, 10 percent forbs, and 5 percent shrubs. Cool-season grasses dominate the plant community. The major grasses include western wheatgrass and green needlegrass. The plant diversity is low. Other grasses and grass-like species occurring may include Sandberg bluegrass, buffalograss, blue grama, sideoats grama, and sedge. The dominant forbs include biscuitroot, wild parsley, scarlet globemallow, and American vetch. Shrubs that may occur on the plant community include brittle cactus and plains pricklypear.

This plant community is resilient and well adapted to the Northern Great Plains climatic conditions. However, two to three years of drought can greatly reduce the vigor and abundance of the green needlegrass and western wheatgrass, increasing the percent bare ground and creating moderate to high soil erosion potential. The actual plant composition may not be greatly changed; however, the production of this plant community varies greatly with fluctuations in precipitation. Water infiltration is low and runoff is moderate to high because of the high clay content in the soil. Plant litter is properly distributed with some movement offsite and natural plant mortality is low.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: NE6401

Growth curve name: Pine Ridge/Badlands, cool-season dominant.

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	28	30	10	2	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Heavy, continuous grazing or extended periods of below average precipitation will move this plant community to the *Western Wheatgrass, Bare Ground Plant Community*.

### Western Wheatgrass, Bare Ground Plant Community

This plant community develops under droughty conditions or heavy continuous grazing. The potential vegetation is made up of 90 percent grasses and grass-likes, 5 percent forbs, and 5 percent shrubs. The grass component is almost entirely western wheatgrass. Other perennial grasses are generally not found. Forbs found in this plant community include pennycress, curlycup gumweed, sweet clover, and annual forbs. Shrubs found include brittle cactus and plains pricklypear.

When compared to the Western Wheatgrass Plant Community, the vigor, production, and basal density of the grasses has been reduced. Often the site will be bare ground with a few sprigs of western wheatgrass and cheatgrass will likely invade this plant community. The plant diversity is extremely low. Due to the low basal density, soil erosion hazards are high. Moving this plant community toward the Western Wheatgrass Plant Community can be accomplished through prescribed grazing and favorable climatic conditions.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: NE6401

Growth curve name: Pine Ridge/Badlands, cool-season dominant.

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	28	30	10	2	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- With prescribed grazing and/or above average precipitation, this plant community will move to the *Western Wheatgrass Plant Community*.

## **Ecological Site Interpretations**

### **Animal Community – Wildlife Interpretations**

MLRA 64 lies within the drier portion of northern mixed-grass prairie ecosystem where sagebrush steppes to the west yield to grassland steppes to the east. Prior to European settlement, this area consisted of diverse grass/shrub land habitats interspersed with varying densities of depressional, instream wetlands, and woody riparian corridors. These habitats provided critical life cycle components for many of its users. Many species of grassland birds, small mammals, reptiles, amphibians, and herds of roaming bison, elk, and pronghorn were among the inhabitants adapted to this semi-arid region. Roaming herbivores, as well as, several small mammal and insect species, were the primary consumers linking the grassland resources to predators such as the wolf, mountain lion, and grizzly bear, as well as, smaller carnivores such as the coyote, bobcat, fox, and raptors. The prairie dog was once abundant; however, the species remains a keystone species within its range. The black-footed ferret, burrowing owl, ferruginous hawk, mountain plover, and swift fox were associated with prairie dog complexes.

Historically, the northern mixed-grass prairie was a disturbance-driven ecosystem with fire, herbivory, and climate functioning as the primary disturbance factors either singly or in combination. Following European settlement, livestock grazing, cropland conversion, elimination of fire, energy development, and other anthropogenic factors influenced species composition and abundance. Introduced and invasive species further impacted plant and animal communities. The bison was a historical keystone species but have been extirpated as a free-ranging herbivore. The loss of the bison and reduction of prairie dog populations and fire as ecological drivers greatly influenced the character of the remaining native plant communities and altered wildlife habitats. Human development has reduced habitat quality for area-sensitive species.

Within MLRA 64, the Dense Clay Ecological Site (ES) provides upland grassland cover with an associated forb, shrub, and tree component. It was typically part of a an expansive grassland landscape that included combinations of Badlands, Thin Breaks, Claypan, Clayey, Loamy, Saline, Sandy, Shallow, Overflow, Subirrigated, and Terrace ESs. This site provided habitat for species requiring unfragmented grassland. Important habitat features include upland nesting habitat for grassland birds, forbs, and insects for brood habitat, and a forage source for small and large

herbivores. Many grassland and shrub steppe nesting bird populations are declining. Extirpated species include free-ranging American bison, grizzly bear, gray wolf, black-footed ferret, mountain plover, Rocky Mountain locust, and swift fox. Swift fox, black-footed ferret, and American bison have been reintroduced into certain areas within this MLRA.

**Western Wheatgrass (HCPC):** The predominance of grasses (mostly wheatgrass) plus high diversity of forbs in this community favors grazers and mixed-feeders, such as deer and pronghorn. Insects, such as pollinators, play a large role in maintaining the forb community and provide a forage base for grassland birds and other species. The complex plant structural diversity provides habitat for a wide array of migratory and resident birds. Grasshopper sparrow, lark bunting, western meadowlark, and sharp-tailed grouse are common and benefit from the structure and composition this plant community provides. This site provides limited breeding habitat for the loggerhead shrike. This site provides excellent nesting and brood rearing habitat for sharp-tailed grouse. Diverse prey populations are available for grassland raptors such as northern harrier, ferruginous hawk, Swainson's hawk, golden eagle, and prairie falcon.

The diversity of forbs provides high nutrition levels for small and large herbivores including mice, spotted ground squirrels, white-tailed and black-tailed jackrabbit, desert cottontail, and deer. This ES provides suitable wintering habitat for pronghorn. The moderate stature of this plant community provides suitable thermal, protective, and escape cover for small herbivores and grassland birds. Predators utilizing this plant community including coyote, American badger, red fox, and long-tailed weasel. Prey abundance and shade opportunities may attract multiple reptile species such as gopher snake, milk snake, prairie rattlesnake, and western ornate box turtle to this site along with lesser numbers of various lizard species.

**Western Wheatgrass/Bare Ground:** This plant community develops as a result of heavy, continuous grazing and precipitation cycles. Forb abundance and diversity decrease significantly. The loss of taller grasses limits species such as sharp-tailed grouse and desert cottontail. Species such as horned lark, long-billed curlew, upland sandpiper, and white- and black-tailed jackrabbit will increase due to the increase in open areas. Prey populations are limited reducing availability for grassland raptors such as golden eagle, ferruginous hawk, and Swainson's hawk. Limited shade opportunities and prey will decrease reptile species such as gopher snake, milk snake, and western ornate box turtle. However, this site may contain increased numbers of prairie rattlesnake and various lizard species.

Impairment of the ecological processes impacts offsite aquatic habitats through excessive runoff, nutrient, and sediment loads. Increased amount of bare ground causes elevated surface temperatures resulting from reduced cover and litter will greatly reduce habitat for most amphibian species, grassland birds, and mammals.

### Animal Preferences (Quarterly – 1,2,3,4†)

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses and Grass-likes</b>							
blue grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
buffalograss	U U D U	N U D U	U U D U	N U D U	N U D U	U U D U	U U D U
green needlegrass	U P U D	N P N P	U P U D	N P N P	N P N P	U P U D	U P U D
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
Sandberg bluegrass	N U N N	N D N N	N U N N	N D N N	N D N N	N U N N	N U N N
sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
sideoats grama	U D P U	U P D U	U D P U	U P D U	U P D U	U D P U	U D P U
western wheatgrass	U P D U	N D N N	U P D U	N D N N	N D N N	U P D U	U P D U
<b>Forbs</b>							
American vetch	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
bastard toadflax	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
bladderpod	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
bluebells	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
deervetch	U U U U	U D D U	U U U U	U D D U	U D D U	U U U U	U D D U
desert biscuitroot	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
gumbo lily	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
heath aster	U U D U	U U P U	U U D U	U U P U	U U P U	U U D U	U U P U
Lambert crazyweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
milkvetch	U U U U	U D U U	U U U U	U D U U	U D U U	U U U U	U D U U
Missouri goldenrod	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
phlox	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
pussytoes	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
scarlet gaura	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
scarlet globemallow	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U D D U
wavyleaf thistle	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western salsify	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U
western wallflower	U D U U	N U U N	U D U U	N U U N	N U U N	U D U U	N U U N
western yarrow	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
wild onion	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
wild parsley	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
<b>Shrubs</b>							
brittle cactus	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
plains pricklypear	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N

**N** = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic

† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

### Animal Community – Grazing Interpretations

The following table lists annual, suggested initial stocking rates with average growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of conservation planning. Often, the current plant composition does not entirely match any particular plant community (as described in this ES description). Because of this, a resource inventory is necessary to document plant composition and production. More accurate carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data and actual stocking records, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Average Annual Production (lbs./acre, air-dry)	Stocking Rate* (AUM/acre)
Western Wheatgrass	1,500	0.47
Western Wheatgrass, Bare Ground	800	0.25

\*Based on 790 lbs./acre (air-dry weight) per Animal Unit Month (AUM) and on 25 percent harvest efficiency (refer to USDA NRCS, National Range and Pasture Handbook).

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

## Hydrology Functions

Water is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic group D. Infiltration and runoff potential for this site varies from moderate to high depending on soil hydrologic group, slope, and ground cover. In many cases, areas with greater than 75 percent ground cover have the greatest potential for higher infiltration and lower runoff. An exception would be where short grasses form a dense sod and dominate the site. Areas where ground cover is less than 50 percent have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

## Recreational Uses

This site provides hunting, hiking, photography, bird watching, and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

## Wood Products

No appreciable wood products are present on the site.

## Other Products

Seed harvest of native plant species can provide additional income on this site.

## Supporting Information

### Associated Sites

(064XY014NE) – Clayey 14-17" P.Z.

(064XY035NE) – Clayey 17-20" P.Z.

(064XY046NE) – Thin Claypan

(064XY044NE) – Claypan

### Similar Sites

(064XY014NE & 064XY035NE) – Clayey 14-17" P.Z. & Clayey 17-20" P.Z. [more green needlegrass; higher production]

(064XY046NE) – Thin Claypan [lower production; greater dominance of short grass and salt tolerant species]

## Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range-trained personnel were also used. Those involved in developing this site include: Stan Boltz, Range Management Specialist (RMS), NRCS; Jill Epley, RMS, NRCS; Rick Peterson, RMS, NRCS; David Steffen, RMS, NRCS; Jeff Vander Wilt; RMS, NRCS; and Phil Young, Soil Scientist, NRCS.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417				

## State Correlation

This site has been correlated with NE, SD, and WY in MLRA 64.

## Field Offices/Counties

Alliance, NE	Box Butte	Kadoka, SD	Jackson	Rushville, NE	Sheridan
Bridgeport, NE	Morrill	Lusk, WY	Niobrara	Scottsbluff, NE	Scottsbluff
Chadron, NE	Dawes/Sioux	Martin, SD	Bennett/Shannon	Torrington, WY	Goshen
Custer, SD	Custer	Pine Ridge, SD	Pine Ridge IR	Valentine, NE	Cherry
Douglas, WY	Converse	Rapid City, SD	Pennington	Wall, SD	East Pennington
Hot Springs, SD	Fall River	Rosebud, SD	Rosebud IR	Wheatland, WY	Platte
White River, SD	Mellette/Todd				

## Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 25a – Pine Ridge Escarpment, 43h – White River Badlands, and 43i – Keya Paha Tablelands.

## Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://www.hprcc.unl.edu/>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://www.wcc.nrcs.usda.gov>)

USDA, NRCS. National Range and Pasture Handbook, September 1997.

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://soils.usda.gov/technical/nasis/>)

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, NRCS, Various Published Soil Surveys.

## Site Description Approval

\_\_\_\_\_  
NE, State Range Management Specialist

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Date

\_\_\_\_\_  
SD, State Range Management Specialist

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Date

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WY, State Range Management Specialist

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Date